Cyano Review Outline Berg+ Sutula /05152013

Questions to address in the review:

1. What is the relative importance of nutrients versus other factors in promoting cyanobacteria dominance and/or cyanotoxin production in aquatic ecosystems globally?
2. What are the spatial and temporal trends in cyanobacteria dominance and/or cyanotoxin production in the Delta?
3. What is the relative importance of nutrients versus other factors in promoting cyanobacteria dominance and/or cyanotoxin production in the San Francisco Bay-Delta?
4. What are the key data gaps and recommended future studies?

Review Outline

1. Executive Summary
2. Introduction, Purpose of Review, and Key Questions
3. Ecology of Cyanobacteria
    a. Basic photophysiology (pigments, light capture, photosynthesis)
    b. Nitrogen fixation
    c. Toxin production
    d. Cyanobacterial ecotypes
        i. Filamentous
        ii. Unicellular
        iii. Freshwater
        iv. Marine/Estuarine
        v. HABs
4. Ecological Characteristics that promote cyanobacteria in Freshwater/estuarine environments (emphasis on mechanistic description of how factors promote blooms/toxic production)
    a. Temperature
    b. Nutrients
    c. Water column stability/mixing
    d. Water clarity
    e. Irradiance
    f. Others…
5. Factors contributing to development of cyanobacterial blooms in the San Francisco Estuary-Delta region
    a. Summary what species are found, their physiological tolerances along a fresh-marine continuum
    b. Summary of spatial and temporal patterns in cyanobacterial blooms and cyanotoxins concentrations
    c. Relative importance of nutrients versus other factors in controlling cyanobacterial dominance
    d. Summary of key data gaps and recommended studies